

Objective: Students will recognize and apply transformations of trigonometric graphs.

Ticket in:

$y = x^2$ is a parent function...

Explain the transformations that take place:

- a) $y = x^2 - 8$
- b) $y = 1/2x^2$
- c) $y = (x + 4)^2$
- d) $y = -3x^2$

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$y = \sin(x)$ is a parent function...

What do you think will happen? Discuss as a group.

- a) $y = -\sin(x)$
- b) $y = 4\sin(x)$
- c) $y = \sin(3x)$
- d) $y = \sin(x - \pi/2)$

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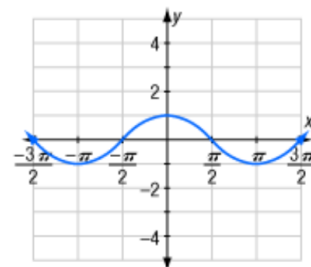
Today, we will investigate the properties of the following trigonometric functions:

$$f(x) = a \sin b(x) + c \quad \text{and} \quad f(x) = a \cos b(x) + c$$

$$f(x) = \sin(x \pm h) \quad \text{and} \quad f(x) = \cos(x \pm h)$$

We will also pay special attention to the concept of **amplitude** and **period**.

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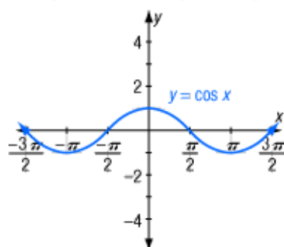


Click the graph!

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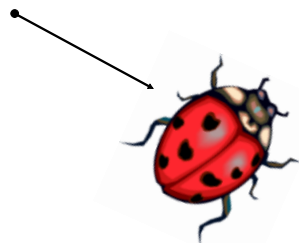
Identifying Phase Shifts for Sine and Cosine Functions

Using $f(x) = \cos x$ as a guide, graph the function $g(x) = \cos\left(x + \frac{\pi}{2}\right)$. Identify the x-intercepts and phase shift.



Learning Goal: Students will understand how to graph sine, cosine and tangent graphs.

See my transformations!

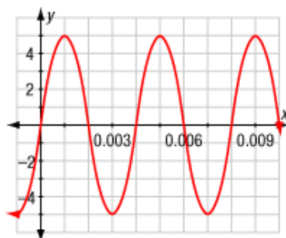


I'm a link!

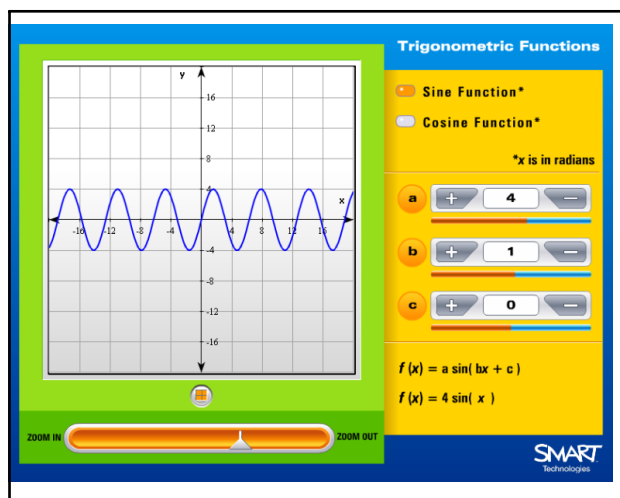
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Sound Application

Use a sine function to graph a sound wave with a period of 0.004 seconds and an amplitude of 5 cm. Find the frequency in hertz for this sound wave.



This is a link!



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- Read about "Stretches and Compressions" on page 860.
- Do the "Try this" problems on page 860.
- Read about "Translations" on page 861.
- Do the "Try this" problems on page 861.
- Page 864 - 865 (5, 8, 12, 17, 22, 33, 47)